IN THE CLAIMS:

Claim 1 (currently amended) A method for storing information ~~in~~ comprising:

(a) providing an encryption key wherein each character of an extended ACII character set is uniquely identified by a DNA code consisting of four (4) DNA bases;

(b) producing at least one synthetic DNA molecule comprising an encryption DNA sequence with encrypted digital information that can be decoded with the encryption key, and first and second primer sequences flanking the encryption DNA sequence, and

(c) storing the DNA molecule with a storage DNA which consists of a mixture of homogeneous/heterogeneous DNA.

Claim 2 (previously presented) The method of claim 1 wherein the storage DNA is human DNA.

Claim 3 (cancelled)

Claim 4 (original) The method of claim 1 wherein the storage DNA is synthetic.

Claim 5 (previously presented) The method of claim 1 wherein, in the encryption key, 256 Extended ASCII characters are identified by DNA.

Claims 6 to 10 (cancelled)

Claim 11 (previously presented) The method of claim 1 wherein the digital information is encrypted with an encryption key software.

Claim 12 (cancelled)

Claim 13 (previously presented) The method of claim 1 wherein synthesis of encrypted sequence(s) is carried out with a DNA synthesizer.

Claims 14 to 16 (cancelled)

Claim 17 (previously presented) The method of claim 1 wherein the encryption DNA encrypts a secret message and step (c) comprises mixing the synthetic DNA molecule with complex denatured DNA strands of human DNA.

Claims 18 and 19 (cancelled)

Claims 20 and 21 (cancelled)

Claim 22 (currently amended) A method for storing information in DNA, comprising;

(a) providing an encryption key wherein each character of an extended ASCII character set is uniquely identified by a DNA code consisting of four (4) DNA bases;

(b) producing a plurality of synthetic DNA molecules, each of the plurality of synthetic DNA molecules comprising an encryption DNA sequence flanked by primers, the encryption DNA sequences of the plurality of synthetic DNA molecules together encrypting a message that can be decoded with the encryption key, wherein the encryption sequence of each of the plurality of DNA molecules encodes a different portion of the message; and

(c) storing the DNA molecule with a storage DNA which consists of a mixture of homogeneous/heterogeneous DNA.

Claim 23 (previously presented). The method of claim 22, wherein the primers of each of the plurality of DNA molecules is different from the primers of each of the other plurality of DNA molecules such that, when the encrypted message is decoded with the encryption key, the primers provide an indication of the order in which each portion of the message should be read.

Claim 24 (previously presented). The method of claim 23, wherein the primers of each of the plurality of synthetic DNA molecules comprise a header primer and a tail primer, wherein the tail primer of each of the plurality of DNA molecules provides an indication that either (a) the message is complete or (b) another portion of the message remains to be decoded.

Claim 25 (previously presented). The method of claim 24, wherein the header primer of each of the plurality of synthetic DNA molecules provides information as to the order in which each portion of the message should be read.

Claim 26 (previously presented). The method of claim 22, wherein the encryption key comprises an array of 256 DNA codes consisting of four (4) DNA bases each of which uniquely identifies an ASCII character.

Claim 27 (previously presented). The method of claim 26, comprising:

(i) encrypting input information made up of a plurality of characters by matching an ASCII value of each character of the input information with one of the DNA codes to produce an encrypted sequence;

(ii) fragmenting the encrypted sequence into a plurality of portions and synthesizing respective DNA encryption sequences comprising each of the portions;

(iii) flanking each of the encryption DNA sequences with a header and tail primer to form the synthetic DNA molecules; and

(iv) mixing the synthetic DNA molecules with complex denatured strands of DNA.

Claim 28 (previously presented). The method of claim 26, wherein the encryption key comprises the encryption key of Fig. 3 of the drawings.

Claim 29 (previously presented). The method of claim 26, further comprising

(i) isolation and amplification of the plurality of synthetic DNA molecules by a polymerase chain reaction;

(ii) sequencing each of the plurality of synthetic DNA molecules; and

(iii) decoding the message using the encryption key.

Claim 30 (previously presented). The method of claim 1, comprising:

(i) encrypting the digital information by matching an ASCII value of each character of the digital information with one of the DNA codes to produce an encrypted sequence;

(ii) synthesizing the encryption DNA sequence comprising the encrypted sequence;

(iii) flanking the encryption DNA sequence with a header and tail primer to form the synthetic DNA molecule; and

(iv) mixing the synthetic DNA molecule with complex denatured strands of DNA.

Claim 31 (previously presented). The method of claim 30, further comprising

(i) isolation and amplification of the synthetic DNA molecule by a polymerase chain reaction;

(ii) sequencing the synthetic DNA molecule; and

(iii) decoding the digital information using the encryption key.

Claim 32 (previously presented). The method of claim 1, wherein the encryption key comprises the encryption key of Fig. 3 of the drawings.

Claim 33 (new). A method for encryption of input information comprising a plain

text, image or digital information, the method comprising:

(a) providing an encryption key by generating an array of 256 elements with each of the elements being uniquely identified by four (4) DNA bases, wherein the encryption key represents a complete extended ASCII set of values;

(b) encrypting characters of the input information character-by-character with the array by matching the ASCII values of each character of the input information with an element of the array to produce a sequence of DNA bases that encrypts the input information;

(c) optionally, fragmenting the encrypted sequence into a plurality of encrypted sequences;

(d) synthesizing a synthetic DNA molecule or molecules comprising each of the encrypted sequences with a DNA synthesizer, including providing each of the encrypted sequences with a header primer and a tail primer flanking the encrypted sequence;

(e) mixing the synthetic DNA molecule or molecules with denatured strands of genomic DNA of a human or other organism to form a DNA storage mixture, said mixture consisting of homogenous and heterogenous DNA; and

(f) optionally, decrypting the encrypted sequence or sequences.

Claim 34 (new). The method according to claim 33, wherein the encrypted sequence is fragmented into a plurality of encrypted sequences in step (c) and wherein each of the encrypted segments is provided with a header primer in step (d) that provides an indication of where each segment fits in the encrypted sequence as a whole.

Claim 35 (new). The method according to claim 34, wherein a tail primer of one of the plurality of encrypted segments is a termination tail primer that indicates that the one encrypted segment fits at the end of the encrypted sequence.

Claim 36 (new). The method according to claim 33, wherein the method comprises decrypting the encrypted sequence or sequences in step (f) and retrieving the input information in the form of a text, image or audio.